

NAME: _____

DATE: _____

Unit-2 Mastery Assessment (version 646)

Question 1 (10 points)

Let f represent a function. If $f[33] = 4$, then there exists a knowable solution to the equation below.

$$y = 2 \cdot (f[3x - 21] + 16)$$

Find the solution.

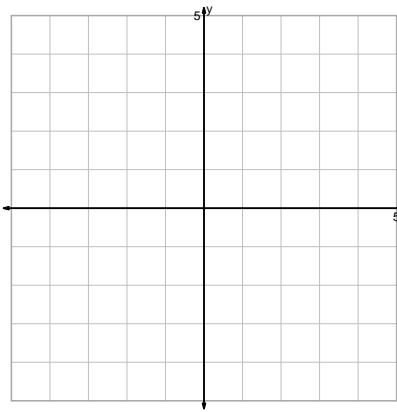
$$x =$$

$$y =$$

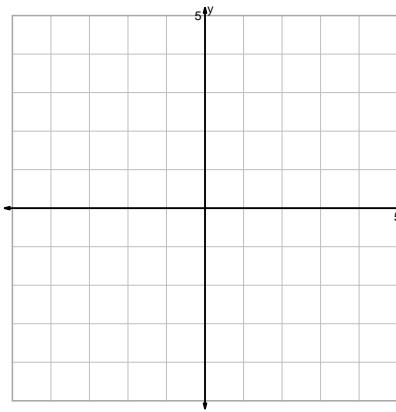
Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

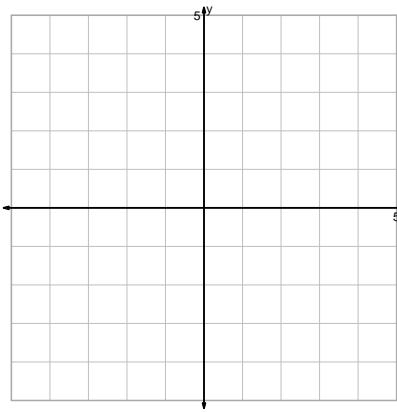
$$y = 2^x - 2$$



$$y = \left(\frac{x}{2}\right)^2$$



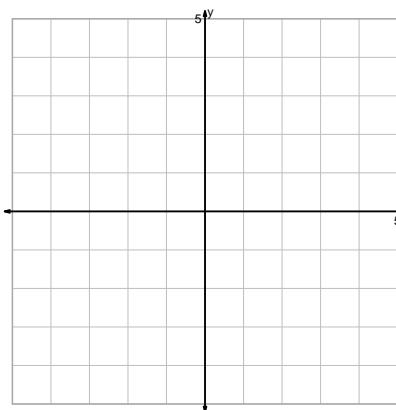
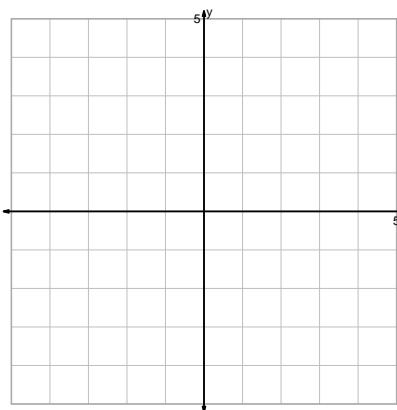
$$y = 2 \cdot \log_2(x)$$



$$y = (x+2)^3$$

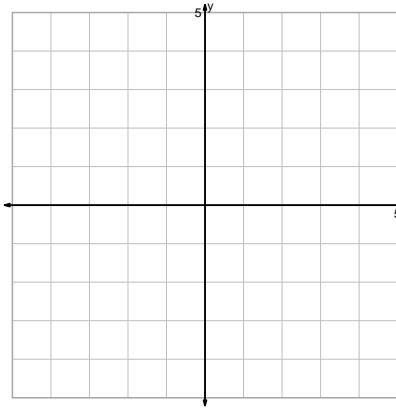
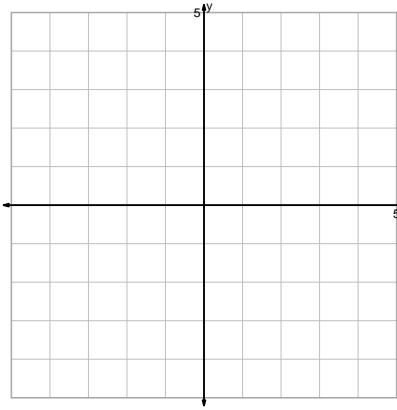
Question 2 continued...

$$y = (2x)^2$$



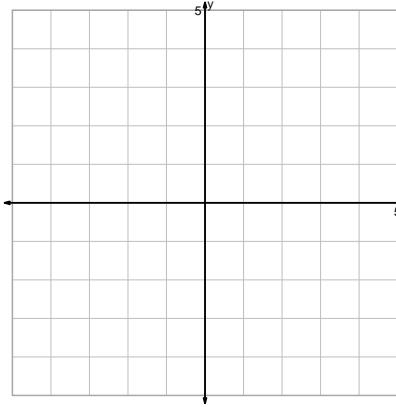
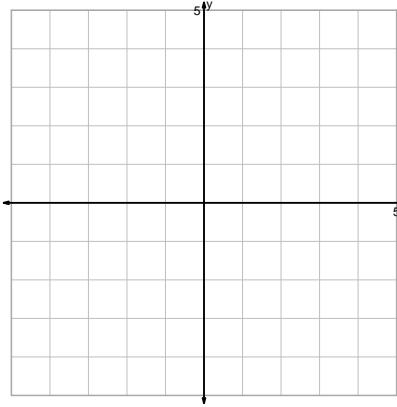
$$y = \sqrt[3]{x} + 2$$

$$y = 2^{-x}$$



$$y = \frac{\sqrt[3]{x}}{2}$$

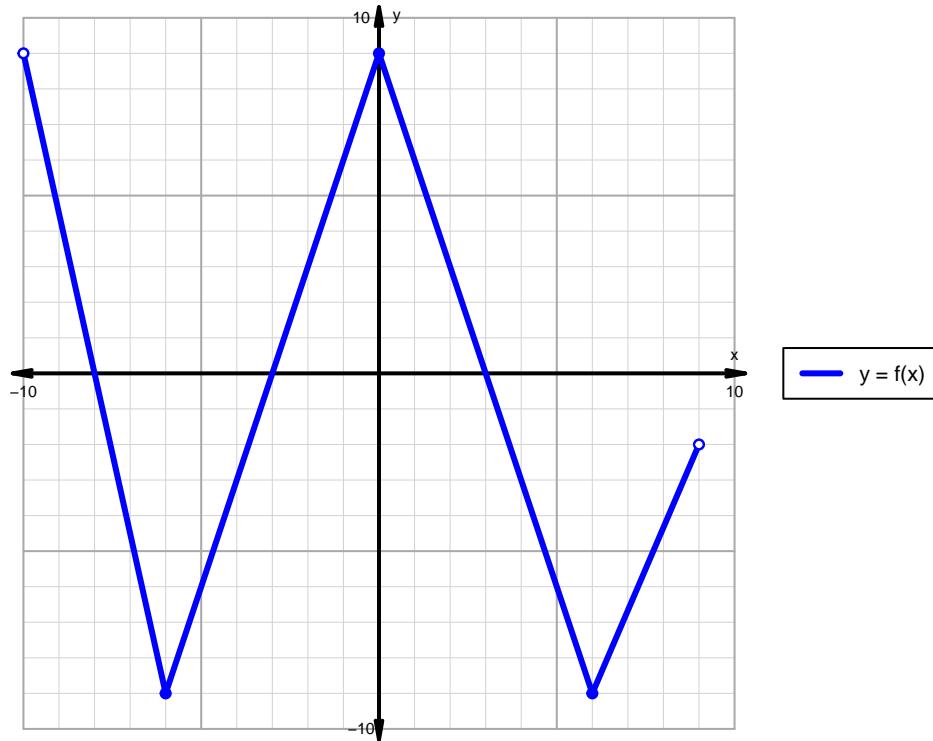
$$y = -\sqrt{x}$$



$$y = \sqrt{x-2}$$

Question 3 (20 points)

A function is graphed below.



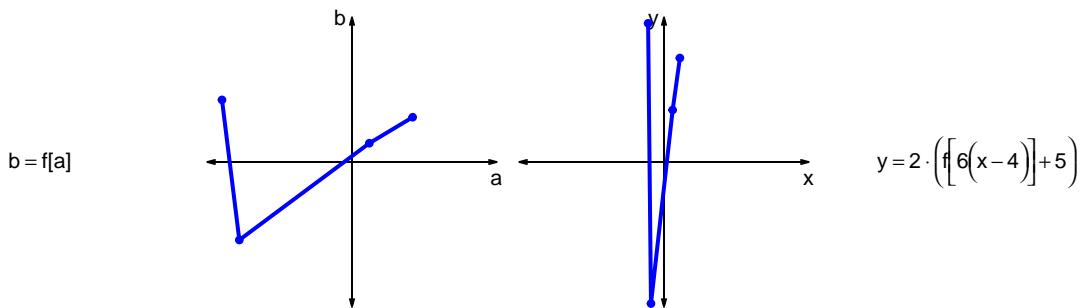
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = 2 \cdot (f[6(x - 4)] + 5)$ are represented below in a table and on graphs.

a	b	x	y
-90	43	-11	96
-78	-54	-9	-98
12	13	6	36
42	31	11	72



- a. Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 2 \cdot (f[6(x - 4)] + 5)$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

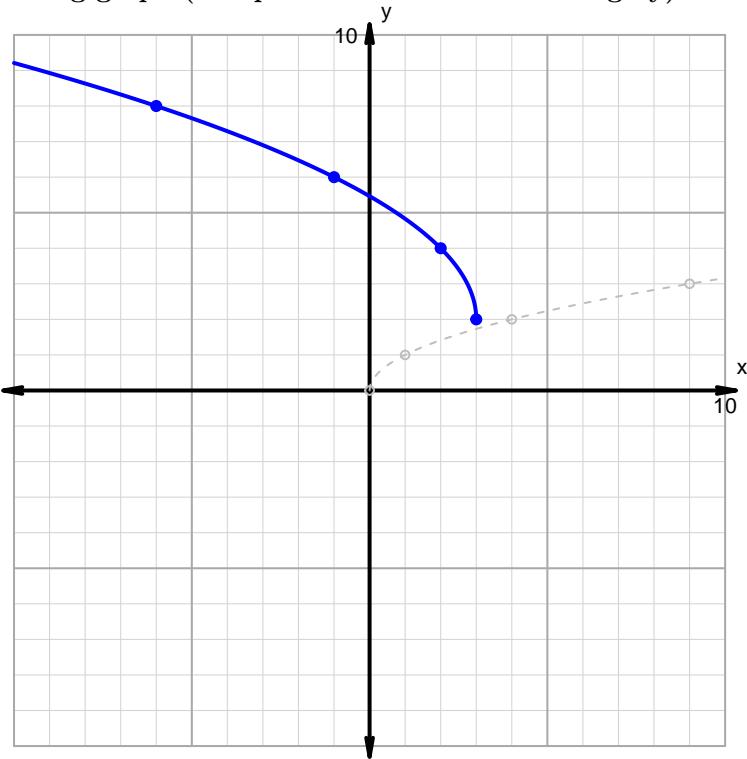
Horizontal transformations

1. Horizontal reflection over y axis.
2. Translate right by distance 3.

Vertical transformations

1. Translate up by distance 1.
2. Vertical stretch by factor 2.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = -3 \cdot |x + 5| + 6$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	